What is claimed is:

1.   A method for operating a cardiac pacemaker in resynchronization pacing mode, comprising:

5   sensing rate and synchronized heart chambers through separate channels and generating sense signals upon detection of depolarization occurring in a chamber;

pacing the rate chamber in accordance with bradycardia pacing mode based upon rate chamber senses and paces;

pacing the synchronized chamber in accordance with a resynchronization pacing 10   mode;

measuring a rate chamber event interval for each cardiac cycle, wherein the interval is the time between rate chamber senses and paces that define a cardiac cycle;

counting the number of senses and paces occurring in each rate and synchronized chamber for a specified period of time and assigning each counted sense or pace to an 15   interval bin representing the rate chamber event interval for that cardiac cycle so that each interval bin contains a sense count and a pace count for each chamber;

calculating an event frequency for the senses and paces in each interval bin over the specified period of time by dividing the sense and pace count in each bin by a denominator equal to the sum of the total sense counts for the rate chamber, the total pace 20   counts for the rate chamber, and the total pace counts for the synchronized chamber only for those cardiac cycles in which no pace was delivered to the rate chamber.
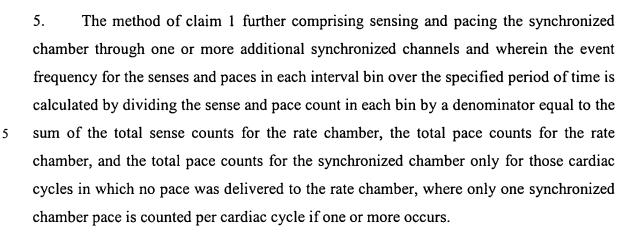

2.   The method of claim 1 wherein the rate and synchronized chambers are the right and left ventricles, respectively, and the rate chamber event interval is an R-R interval.

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3.   The method of claim 2 wherein the R-R interval is measured with respect to right ventricular senses and paces.

4.   The method of claim 1 wherein the rate and synchronized chambers are the right 30   and left atria, respectively.

5. The method of claim 1 further comprising sensing and pacing the synchronized chamber through one or more additional synchronized channels and wherein the event frequency for the senses and paces in each interval bin over the specified period of time is calculated by dividing the sense and pace count in each bin by a denominator equal to the sum of the total sense counts for the rate chamber, the total pace counts for the rate chamber, and the total pace counts for the synchronized chamber only for those cardiac cycles in which no pace was delivered to the rate chamber, where only one synchronized chamber pace is counted per cardiac cycle if one or more occurs.

6. A cardiac rhythm management device, comprising:

sensing channels for sensing depolarizations in a pair of heart chambers and generating sense signals in accordance therewith;

right and left pacing channels for delivering paces to the right and left chambers, wherein one chamber is designated as the synchronized chamber and the other chamber as the rate chamber;;

a controller for controlling the delivery of paces to the rate chamber in accordance with a bradycardia pacing mode and to pace the synchronized chamber in accordance with a resynchronization pacing mode;
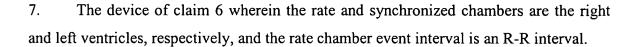
wherein the controller is programmed to measure a rate chamber event interval for each cardiac cycle, wherein the interval is the time between rate chamber senses and paces that define a cardiac cycle, and to count the number of senses and paces occurring in each rate and synchronized chamber for a specified period of time and assign each counted sense or pace to an interval bin representing the rate chamber event interval for that cardiac cycle so that each interval bin contains a sense count and a pace count for each chamber; and,

wherein the controller is programmed to calculate an event frequency for the senses and paces in each interval bin over the specified period of time by dividing the sense and pace count in each bin by a denominator equal to the sum of the total sense counts for the rate chamber, the total pace counts for the rate chamber, and the total pace counts for the synchronized chamber only for those cardiac cycles in which no pace was delivered to the rate chamber.

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7.   The device of claim 6 wherein the rate and synchronized chambers are the right and left ventricles, respectively, and the rate chamber event interval is an R-R interval.

5 8.   The device of claim 7 wherein the controller is programmed to measure the R-R interval with respect to right ventricular senses and paces.

9.   The device of claim 6 wherein the rate and synchronized chambers are the right and left atria, respectively.

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10.   The device of claim 6 further comprising one or more additional synchronized channels and wherein the controller is programmed to calculate the event frequency for the senses and paces in each interval bin over the specified period of time by dividing the sense and pace count in each bin by a denominator equal to the sum of the total sense

15 counts for the rate chamber, the total pace counts for the rate chamber, and the total pace counts for the synchronized chamber only for those cardiac cycles in which no pace was delivered to the rate chamber, where only one synchronized chamber pace is counted per cardiac cycle if one or more occurs.

20 11.   The device of claim 6 further comprising a telemetry interface and wherein the controller is programmed to transmit the event frequencies for senses and paces in each interval bin as a percentage of cardiac cycles to an external programmer.

12.   A cardiac rhythm management system, comprising:

25   an external programmer;

a pacemaker having sensing channels for sensing depolarizations in a pair of heart chambers and generating sense signals in accordance therewith, right and left pacing channels for delivering paces to the right and left chambers, wherein one chamber is designated as the synchronized chamber and the other chamber as the rate chamber, a

30 controller for controlling the delivery of paces to the rate chamber in accordance with a bradycardia pacing mode and to pace the synchronized chamber in accordance with a
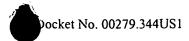
resynchronization pacing mode, and a telemetry interface for transmitting data to the external programmer;

wherein the pacemaker controller is programmed to measure a rate chamber event interval for each cardiac cycle, wherein the interval is the time between rate chamber

5   senses and paces that define a cardiac cycle, and to count the number of senses and paces occurring in each rate and synchronized chamber for a specified period of time and assign each counted sense or pace to an interval bin representing the rate chamber event interval for that cardiac cycle so that each interval bin contains a sense count and a pace count for each chamber;

10   wherein the controller is programmed to transmit the counts in each interval bin to an external programmer; and,

wherein the external programmer is configured to calculate an event frequency for the senses and paces in each interval bin over the specified period of time by dividing the sense and pace count in each bin by a denominator equal to the sum of the total sense

15   counts for the rate chamber, the total pace counts for the rate chamber, and the total pace counts for the synchronized chamber only for those cardiac cycles in which no pace was delivered to the rate chamber.

13.   The system of claim 12 wherein the rate and synchronized chambers are the right

20   and left ventricles, respectively, and the rate chamber event interval is an R-R interval.

14.   The system of claim 13 wherein the controller is programmed to measure the R-R interval with respect to right ventricular senses and paces.

25   15.   The system of claim 12 wherein the rate and synchronized chambers are the right and left atria, respectively.

16.   The device of claim 12 further comprising one or more additional synchronized channels and wherein the external programmer is configured to calculate the event

30   frequency for the senses and paces in each interval bin over the specified period of time by dividing the sense and pace count in each bin by a denominator equal to the sum of the

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total sense counts for the rate chamber, the total pace counts for the rate chamber, and the total pace counts for the synchronized chamber only for those cardiac cycles in which no pace was delivered to the rate chamber, where only one synchronized chamber pace is counted per cardiac cycle if one or more occurs.